

WHAT IS CLAIMED IS:

1. A process for the preparation of a patterned polyurethane backed tufted good comprising:

- 5 (1) applying a puddle of a reactive polyurethane mixture to the back side of a greige good or a precoated greige good, wherein the reactive polyurethane mixture comprises:
- (a) at least one polyisocyanate component,
- (b) at least one isocyanate-reactive component,
- (c) at least one non-Newtonian thickeners,
- 10 and
- (d) at least one filler;
- (2) passing the greige good coated with the reactive polyurethane mixture under a doctoring device, wherein the edge of the doctoring device is patterned or the doctoring
- 15 device comprises a removable attachment that is patterned, thereby forming a pattern in the polyurethane mixture as it passes under the edge of the doctoring device or the removable attachment;
- and
- 20 (3) curing the polyurethane backed greige good which exhibits the desired pattern in the polyurethane backing.
2. The process of Claim 1, wherein the doctoring device comprises a doctor blade, a doctor bar, or a doctor roller.
3. The process of Claim 1, wherein said non-Newtonian
- 25 thickener is an inorganic thickener having a specific surface area about 10 m²/g or greater.
4. The process of Claim 3, wherein said inorganic thickener is present in an amount of from about 0.25 to 20 parts per 100 parts of isocyanate-reactive ingredients in the reactive polyurethane mixture.
- 30 5. The process of Claim 3, wherein said inorganic non-Newtonian thickener is selected from the group consisting of precipitated calcium carbonate, clay minerals, fumed silica, and mixtures thereof.

6. The process of Claim 3, wherein said inorganic non-Newtonian thickener comprises fumed silica and is present in an amount of at least:

$$LL = 3 - 0.01 \times FL$$

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wherein:

LL: represents lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

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FL: represents filler level in parts per 100 parts of isocyanate-reactive components;

and wherein the amount of non-Newtonian thickener is no more than:

$$UL = 8 - 0.02 \times FL$$

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wherein:

UL: represents upper limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

20

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components.

7. The process of Claim 3, wherein said inorganic non-Newtonian thickener comprises precipitated calcium carbonate and is present in an amount of at least:

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$$LL = 18 - 0.06 \times FL$$

wherein:

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LL: represents the lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components;

5 and wherein the amount of non-Newtonian thickener is no more than:

$$UL = 48 - 0.012 \times FL$$

wherein:

UL: represents the upper limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

10

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components.

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8. The process of Claim 3, wherein said inorganic non-Newtonian thickener has a mean particle size less than 1 μm .

9. The process of Claim 3, wherein said inorganic non-Newtonian thickener has a mean particle size less than 0.3 μm .

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10. The process of Claim 3, wherein said thickener forms aggregates and/or agglomerates.

11. The process of Claim 1, wherein an organic non-Newtonian thickener is employed.

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12. The process of Claim 11, wherein said organic non-Newtonian thickener is an associative thickener.

13. The process of Claim 1, wherein the viscosity of said reactive polyurethane formulation at a first, high rate of shear is within 20% of the viscosity of a reactive polyurethane of the same formulation but devoid of non-Newtonian thickener, and is at least three times the viscosity of the non-Newtonian thickener-devoid composition at a second, lower rate of shear.

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14. The process of Claim 1, additionally comprising laminating a woven secondary backing to the polyurethane coating of the desired pattern after (2) passing under the doctoring device.

15. The process of Claim 1, wherein the precoated greige good is selected from the group consisting of a cured latex precoat, a cured urethane precoat, a partially cured urethane precoat and an uncured urethane precoat.

16. A process for the preparation of a polyurethane backed tufted good comprising:

- 10 (1) applying a puddle of a reactive polyurethane mixture to the back side of a greige good or a previously coated greige good, wherein the reactive polyurethane mixture comprises:
 - (a) at least one polyisocyanate component,
 - (b) at least one isocyanate-reactive component,
 - 15 (c) at least one non-Newtonian thickeners, and
 - (d) at least one filler;
- (2) gauging the greige good coated with the reactive polyurethane mixture with a doctoring device;
- 20 (3) laminating a woven secondary backing to the reactive polyurethane mixture;
- (4) applying pressure against the face of the greige good such that the urethane is pushed through the windows of the woven secondary backing, thereby forming beads of
- 25 polyurethane on the exposed surface of the woven secondary backing;
- and
- (5) curing the polyurethane backed greige good.
17. The process of Claim 16, wherein the doctoring device
- 30 comprises a doctor blade, a doctor bar, or a doctor roller.

18. The process of Claim 16, wherein said non-Newtonian thickener is an inorganic thickener having a specific surface area about 10 m²/g or greater.

19. The process of Claim 18, wherein said inorganic thickener is present in an amount of from about 0.25 to 20 parts per 100 parts of isocyanate-reactive ingredients in the reactive polyurethane mixture.

20. The process of Claim 18, wherein said inorganic non-Newtonian thickener is selected from the group consisting of precipitated calcium carbonate, clay minerals, fumed silica, and mixtures thereof.

21. The process of Claim 18, wherein said inorganic non-Newtonian thickener comprises fumed silica and is present in an amount of at least:

$$LL = 3 - 0.01 \times FL$$

wherein:

LL: represents lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components;

and wherein the amount of non-Newtonian thickener is no more than:

$$UL = 8 - 0.02 \times FL$$

wherein:

UL: represents upper limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components.

22. The process of Claim 18, wherein said inorganic non-Newtonian thickener comprises precipitated calcium carbonate being present in an amount, per 100 parts of isocyanate-reactive components, of at least:

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$$LL = 18 - 0.06 \times FL$$

wherein:

LL: represents lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

10 and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components;

and wherein the amount of non-Newtonian thickener is no more than:

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$$UL = 48 - 0.12 \times FL$$

wherein:

UL: represents upper limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

20

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components.

25 23. The process of Claim 18, wherein said inorganic non-Newtonian thickener has a mean particle size less than 1 μm .

24. The process of Claim 18, wherein said inorganic non-Newtonian thickener has a mean particle size less than 0.3 μm .

30 25. The process of Claim 18, wherein said thickener forms aggregates and/or agglomerates.

26. The process of Claim 16, wherein an organic non-Newtonian thickener is employed.

27. The process of Claim 26 wherein said organic non-Newtonian thickener is an associative thickener.

28. The process of Claim 16, wherein the viscosity of said reactive polyurethane formulation at a first, high rate of shear is within
5 20% of the viscosity of a reactive polyurethane of the same formulation but devoid of non-Newtonian thickener, and is at least three times the viscosity of the non-Newtonian thickener-devoid composition at a second, lower rate of shear.

29. The process of Claim 16, wherein the precoated greige good
10 is selected from the group consisting of a cured latex precoat, a cured urethane precoat, a partially cured urethane precoat and an uncured urethane precoat.

30. A polyurethane backed tufted good which exhibits a pattern on the back surface, and comprises:

15 (A) a greige good comprising one or more fibers tufted into a primary backing, said greige good having a face surface and a back surface wherein the back surface may be uncoated, or coated with a latex or urethane precoat;

and

20 (B) a polyurethane backing having a face surface and a back surface, wherein the face surface of is adhered to the back surface of said greige good or the precoat when present, and said polyurethane backing is a reactive polyurethane mixture comprising:

- 25 (1) at least one polyisocyanate component,
(2) at least one isocyanate-reactive component,
(3) at least one non-Newtonian thickener,
and
(4) at least one filler;

30 wherein the pattern in the polyurethane backing is formed by passing the polyurethane backed greige good under a doctoring device, wherein the edge of the doctoring device is patterned or the

doctoring device comprises a removable attachment that is patterned.

31. A polyurethane backed tufted good which exhibits a pattern on the back surface, and comprises

- 5 (A) a greige good comprising one or more fibers tufted into a primary backing, said greige good having a face surface and a back surface, wherein the back surface may be uncoated, coated with a latex or urethane precoat;
- 10 (B) a polyurethane backing having a face surface and a back surface, wherein the face surface is adhered to the back surface of said greige good or the precoat when present, and said polyurethane backing is a reactive polyurethane mixture comprising:
- 15 (1) at least one polyisocyanate component,
(2) at least one isocyanate-reactive component,
(3) at least one non-Newtonian thickener,
and
(4) at least one filler;
- 20 and
(C) a woven secondary backing which is laminated to the back surface of said polyurethane backing;

wherein the pattern is formed by the application of pressure or force to the face of the tufted good in a manner that pushes some of the polyurethane coating through the windows of the woven
25 secondary backing.